

Claims

1. A construction machine for working pieces of ground, having a milling roller (10) on whose surface a plurality of chisel holders (23) is arranged, wherein a chisel (30), in particular a round shaft chisel, is exchangeably received in a chisel receiver (24) of the chisel holder (23),

characterized in that

a tool changing device is assigned to the road-milling machine (10),

and the tool changing device removes and/or mounts the chisel(s) (30) from or in the chisel holder (23).

2. The construction machine in accordance with claim 1,

characterized in that

the tool changing device is a mechanical tool device.

3. The construction machine in accordance with claim 1 or 2,

characterized in that

the tool changing device is arranged in the interior of the milling roller (10).

4. The construction machine in accordance with claim 1 or 2,

characterized in that

the tool changing device is arranged outside of the milling roller (10).

5. The construction machine in accordance with one of claims 1 to 4,

characterized in that

the tool changing device has at least one tool changer (40), which can be assigned to the individual chisel holders, (23) or groups of chisel holders, by means of an actuating unit.

6. The construction machine in accordance with one of claims 1 to 4,

characterized in that

the tool changing device has a tool changer (40), which is simultaneously assigned to all chisels (23).

7. The construction machine in accordance with one of claims 1 to 4,

characterized in that

a tool changer (40) of the tool changing device is respectively assigned to each chisel holder (23).

8. The construction machine in accordance with claim 7,

characterized in that

the tool changer (40) is fixedly connected with the chisel holder (23).

9. The construction machine in accordance with one of claims 1 to 8,

characterized in that

the tool changing device imparts at least one dynamic pulse to the milling roller (10), a portion of the milling

roller (10), the chisel holder (23), or a group of chisel holders (23).

10. The construction machine in accordance with claim 9,

characterized in that

the dynamic pulse is generated by means of a vibration device.

11. The construction machine in accordance with claim 9,

characterized in that

at least one stop (51) is assigned to the milling roller (10), which is provided with a contact face (52) pointing in the work movement direction, and

a pulse generator (50) creates a force on the contact face (52), which is directed opposite the work movement direction.

12. The construction machine in accordance with claim 11,

characterized in that

the pulse generator (05) is a mallet, which acts with its weight on this contact face (52).

13. The construction machine in accordance with one of claims 1 to 12,

characterized in that

a displacement device positions the milling roller (10) or the chisel (30) in relation to at least one tool changer (40).

14. The construction machine in accordance with claim 13,

characterized in that

the milling roller (10) is coupled with a drive motor of the construction machine by means of a drive train,

wherein the displacement device has an auxiliary drive which can be coupled with the drive train, which turns the milling roller (10) in the raised position,

wherein the torque of the auxiliary drive is greater than the inertia of the milling roller (10) and of the portion of the drive train moving together with the milling roller (10), when the drive motor is switched off or uncoupled.

15. The construction machine in accordance with one of claims 5 to 14,

characterized in that

the actuating unit positions the at least one tool changer (40) relative to the milling roller (10).

16. The construction machine in accordance with one of claims 5 to 15,

characterized in that

the actuating unit and/or the displacement device have a position measuring system, and

the actuating unit and/or the displacement device are equipped with a numerical control.

17. The construction machine in accordance with one of claims 1 to 16,

characterized in that

the tool changer (10) has a shoulder which acts on a form surface of the chisel (30), and the shoulder pulls or pushes the chisel (30) out of the chisel holder (24), or pushes or pulls it into the chisel holder (24), or that the tool changer (40) engages the chisel (30) in a positively connected manner.

18. The construction machine in accordance with one of claims 1 to 17,

characterized in that

the tool changing device conveys the removed chisels (30) directly, or via a conveying device, to a container.

19. The construction machine in accordance with one of claims 1 to 18,

characterized in that

a separating device is assigned to the tool changing device, and

the separating device conveys chisels (30) from a storage unit to the tool changing device.

20. The construction machine in accordance with one of claims 1 to 15,

characterized in that

a detection device is assigned to the milling roller (10), which checks the wear state of the chisels (30), or of a portion of the chisels (30), or of a single chisel (30), continuously, at intervals, or when directed, and that, upon reaching a predetermined wear state, the detection device initiates or signals a tool change.

21. The construction machine in accordance with claim 20,

characterized in that

at least one signal reception unit of the detection device is assigned to at least one structural unit of the machine which directly or indirectly participates in the working process, that the signal reception unit detects an operational state of the structural unit of the machine, and

the signal reception unit determines the wear state via a signal processing arrangement.

**New Claims 1 to 19**

(replace former claims 1 to 21)

1. A construction machine for working pieces of ground, having a milling roller (10) on whose surface a plurality of chisel holders (23) is arranged, wherein a chisel (30), in particular a round shaft chisel, is exchangeably received in a chisel receiver (24) of the chisel holder (23), and wherein a tool changing device removes the chisel(s) (30) from the chisel holder (23) and/or installs them in it,

characterized in that

the tool changing device is assigned to the milling roller (10),

a displacement device positions the milling roller (10) or the chisel (30) in relation to at least one tool changer (40), and/or

an actuating unit positions the at least one tool changer (40) in relation to the milling roller (10).

2. A construction machine for working pieces of ground, having a milling roller (10) on whose surface a plurality of chisel holders (23) is arranged, wherein a chisel (30), in particular a round shaft chisel, is exchangeably received in a chisel receiver (24) of the chisel holder (23), and wherein a tool changing device removes the chisel(s) (30) from the chisel holder (23) and/or installs them in it,

characterized in that

the tool changing device imparts at least one dynamic pulse to the milling roller (10), a portion of the milling

roller (10), the chisel holder (23), or a group of chisel holders (23), and that because of the mass inertia of the chisel (30) the pulse introduces an ejection force in the chisel (30).

3. The construction machine in accordance with claim 1 or 2,

characterized in that  
the tool changing device is a mechanical tool device.

4. The construction machine in accordance with one of claims 1 to 3,

characterized in that  
the tool changing device is arranged in the interior of the milling roller (10).

5. The construction machine in accordance with one of claims 1 to 3,

characterized in that  
the tool changing device is arranged outside of the milling roller (10).

6. The construction machine in accordance with one of claims 1 to 5,

characterized in that  
the tool changing device has at least one tool changer (40), which can be assigned to the individual chisel holders (23), or groups of chisel holders, by means of an actuating unit.

7. The construction machine in accordance with one of claims 1 to 5,

characterized in that  
the tool changing device has a tool changer (40), which

is simultaneously assigned to all chisels (23).

8. The construction machine in accordance with one of claims 1 to 5,

characterized in that

a tool changer (40) of the tool changing device is respectively assigned to each chisel holder (23).

9. The construction machine in accordance with claim 8,

characterized in that

the tool changer (40) is fixedly connected with the chisel holder (23).

10. The construction machine in accordance with claim 2,

characterized in that

the dynamic pulse is generated by means of a vibration device.

11. The construction machine in accordance with claim 2,

characterized in that

at least one stop (51) is assigned to the milling roller (10), which is provided with a contact face (52) pointing in the work movement direction, and

a pulse generator (50) creates a force on the contact face (52), which is directed opposite the work movement direction.

12. The construction machine in accordance with claim 11,

characterized in that

the pulse generator (05) is a mallet, which acts with

its weight on this contact face (52).

13. The construction machine in accordance with one of the preceding claims,

characterized in that

the milling roller (10) is coupled with a drive motor of the construction machine by means of a drive train,

wherein the displacement device has an auxiliary drive which can be coupled with the drive train, which turns the milling roller (10) in the raised position,

wherein the torque of the auxiliary drive is greater than the inertia of the milling roller (10) and of the portion of the drive train moving together with the milling roller (10), when the drive motor is switched off or uncoupled.

14. The construction machine in accordance with one of claims 6 to 13,

characterized in that

the actuating unit positions the at least one tool changer (40) relative to the milling roller (10).

15. The construction machine in accordance with one of claims 1 to 14,

characterized in that

the actuating unit and/or the displacement device have a position measuring system, and

the actuating unit and/or the displacement device are equipped with a numerical control.

16. The construction machine in accordance with one of claims 1 to 15,

characterized in that

the tool changing device conveys the removed chisels

(30) directly, or via a conveying device, to a container.

17. The construction machine in accordance with one of claims 1 to 16,

characterized in that

a separating device is assigned to the tool changing device, and

the separating device conveys chisels (30) from a storage unit to the tool changing device.

18. The construction machine in accordance with one of claims 1 to 17,

characterized in that

a detection device is assigned to the milling roller (10), which checks the wear state of the chisels (30), or of a portion of the chisels (30), or of a single chisel (30), continuously, at intervals, or when directed, and that, upon reaching a predetermined wear state, the detection device initiates or signals a tool change.

19. The construction machine in accordance with claim 18,

characterized in that

at least one signal reception unit of the detection device is assigned to at least one structural unit of the machine which directly or indirectly participates in the working process, that the signal reception unit detects an operational state of the structural unit of the machine, and

the signal reception unit determines the wear state via a signal processing arrangement.